

Date: Fri, 27 Aug 93 04:30:35 PDT
From: Ham-Homebrew Mailing List and Newsgroup <ham-homebrew@ucsd.edu>
Errors-To: Ham-Homebrew-Errors@UCSD.Edu
Reply-To: Ham-Homebrew@UCSD.Edu
Precedence: Bulk
Subject: Ham-Homebrew Digest V93 #23
To: Ham-Homebrew

Ham-Homebrew Digest Fri, 27 Aug 93 Volume 93 : Issue 23

Today's Topics:

 DDS article ?
 home-brewed DSP code... suggestions? (3 msgs)
 Mini-Circuits (4 msgs)
 SWR Meters
 What kits would you like to see?

Send Replies or notes for publication to: <Ham-Homebrew@UCSD.Edu>
Send subscription requests to: <Ham-Homebrew-REQUEST@UCSD.Edu>
Problems you can't solve otherwise to brian@ucsd.edu.

Archives of past issues of the Ham-Homebrew Digest are available
(by FTP only) from UCSD.Edu in directory "mailarchives/ham-homebrew".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: Thu, 26 Aug 1993 13:05:11 GMT
From: caen!uvaarpa!cv3.cv.nrao.edu!jabbah!dvarney@uunet.uu.net
Subject: DDS article ?
To: ham-homebrew@ucsd.edu

Where was that DDS article using the Harris chip and the CA3338 published ?
Also, the date would be nice.

73s,
 Doug -- WA1UVP
 <dvarney@nrao.edu>

--

Sometimes it is better to have twenty million instrucionts by Friday than
twenty million instructions per second.

-- Wesley Clark

Date: 26 Aug 93 23:34:15 GMT
From: ogicse!uwm.edu!cs.utexas.edu!sdd.hp.com!col.hp.com!fc.hp.com!
perry@network.ucsd.edu
Subject: home-brewed DSP code... suggestions?
To: ham-homebrew@ucsd.edu

: porter@hopper.ACS.Virginia.EDU (Alan Porter) writes:
: > Ideally, what I'd like to see is a plug-in card for a PC that has
: > A-to-D and D-to-A, plus whatever else your typical DSP setup has.
: > I'd like to be able to monkey around with my audio signal with home-made

How about using a SoundBlaster and programming the FFTs yourself?

Perry Scott
AA0ET

Date: Thu, 26 Aug 1993 17:06:17 GMT
From: concert!uvaarpa!murdoch!hopper!porter@decwrl.dec.com
Subject: home-brewed DSP code... suggestions?
To: ham-homebrew@ucsd.edu

In order to build my CW speed, I have been listening to 40m a lot.
Sometimes I have considerable difficulty when two stations are close
together, because my radio has a pretty wide band pass.

To solve this and other audio filtering problems, I have been considering
getting into DSP, because I am much better at hacking together software
than hardware. Hopefully, I can write my own DSP programs to do
different types of audio filtering. More than anything, I think it
will be a lot of fun.

Ideally, what I'd like to see is a plug-in card for a PC that has
A-to-D and D-to-A, plus whatever else your typical DSP setup has.
I'd like to be able to monkey around with my audio signal with home-made
software. It'd be cool to write your own automatic notch filter, maybe
a graphical interface where you can manipulate a real-time spectral
analysis to change the filtering on the fly. You know, click here
to cut off all frequencies below this point, put a notch filter here,
etc.

I am not interested in pre-packaged filters. I want to write my own
software.

- What type of DSP cards are available for the PC?
- How much do they cost?
- How programmable are they?
- What type of programming language/package do they use?
- Are there any that use the regular C compilers, like Borland?
- What type of goodies do DSP cards usually have on them?
- Would I be better off writing software for a Soundblaster?

Right now, I am just looking for a direction to get started. I'd like to start with something that is relatively cheap, so if it does not work, I have not blown a fortune. Any suggestions are welcome!

73 de KD4DNU

--

Alan	\\\\\\	work: (804) 978-5764	\\\\	home: (804) 973-ALAN
Porter	\\XX/	alan.porter@cho.ge.com	\\\\	big@catt.ncsu.edu

--

Alan	\\\\\\	work: (804) 978-5764	\\\\	home: (804) 973-ALAN
Porter	\\XX/	alan.porter@cho.ge.com	\\\\	big@catt.ncsu.edu

Date: 26 Aug 93 21:57:57 GMT
 From: dog.ee.lbl.gov!agate!spool.mu.edu!bloom-beacon.mit.edu!biosci!barnet.net!
 infoserv!cpuig!news@network.ucsd.edu
 Subject: home-brewed DSP code... suggestions?
 To: ham-homebrew@ucsd.edu

porter@hopper.ACS.Virginia.EDU (Alan Porter) writes:

```
>
> Ideally, what I'd like to see is a plug-in card for a PC that has
> A-to-D and D-to-A, plus whatever else your typical DSP setup has.
> I'd like to be able to monkey around with my audio signal with home-made
>
> - What type of DSP cards are available for the PC?
> - How much do they cost?
> - How programmable are they?
> - What type of programming language/package do they use?
> - Are there any that use the regular C compilers, like Borland?
> - What type of goodies do DSP cards usually have on them?
> - Would I be better off writing software for a Soundblaster?
>
> Right now, I am just looking for a direction to get started. I'd
> like to start with something that is relatively cheap, so if it
> does not work, I have not blown a fortune. Any suggestions are
> welcome!
```

>

Your lowest cost option is probably the recently released TI evaluation board, which costs about \$100. It is not a PC plug-in card, but communicates via a serial line (RS-232 cable). TI part no. is TMS3200026. Available from TI distributors; try Marshall at 1-800-522-0084.

Sorry, for this price you will have to program in TMS320 assembler rather than C. The A/D and D/A interfaces are included with the board. It is fully programmable, but memory is limited.

PC plug in boards tend to be quite a bit more expensive: \$600 and up. C compilers are not included in the basic price, but are extras.

In addition to the DSP board and assembler/compiler, you will need access to filter design software (Parks-McClellan algorithm, etc.). The best value in this respect is The Student Version Of MATLAB, available at many college bookstores for about \$50 (Prentice-Hall ISBN 0-13-855974-0), in both Mac and PC versions.

--

Carlos Puig, KJ6ST

cpuig@infoserv.com

Campbell, CA

Date: Thu, 26 Aug 93 08:31:28 MDT

From: elroy.jpl.nasa.gov!usc!sol.ctr.columbia.edu!news.kei.com!news.byu.edu!news@ames.arpa

Subject: Mini-Circuits

To: ham-homebrew@ucsd.edu

I have tried getting some of the amplifiers, but their minimum order is ten. The minimum order for the other components is one. How did you work around this? I would like to order I think it was MAR-6 \$1 or so, but I don't want to buy 10 just 2-3.

Richard Christensen

Date: 26 Aug 1993 16:06:06 GMT

From: koriel!male.EBay.Sun.COM!uranium!raymonda@ames.arpa

Subject: Mini-Circuits

To: ham-homebrew@ucsd.edu

In article @byu.edu, richard@alaska.et.byu.edu (Richard B. Christensen) writes:
.>I have tried getting some of the amplifiers, but their minimum order

.>is ten. The minimum order for the other components is one. How did
>you work around this? I would like to order I think it was MAR-6 \$1
>or so, but I don't want to buy 10 just 2-3.
>
>Richard Christensen

Look at the back cover of the Mini-Circuits Catalog. There is a list
of numerous local distributors. They usually have different sales policies than
the national distribution organization (the company store). The local offices
are usually pretty good about small orders and providing evaluation samples.
Good luck.

Ray Anderson WB6TPU
raymond.anderson@sun.com
rander@netcom.com

Date: 26 Aug 93 14:04:51 GMT
From: ncrgw2.ncr.com!ncrhub2!ncrlnk!ncrwic!donald!kthompso@uunet.uu.net
Subject: Mini-Circuits
To: ham-homebrew@ucsd.edu

dbraun@ilx049.intel.com (Doug Braun) writes:

)The Mini-Circuits company plugs their "740 page RF-IF Designer's Handbook".
)It this a worthwhile addition to the homebrewer's bookshelf? Does
)anyone know the best way to get one from them, hopefully for free?

They give it away. It is just a catalog of their stuff.

--
Ken Thompson NOITL
Disk Array Hardware Development
Peripheral Products MPD-Wichita
NCR Corp. an AT&T company
3718 N. Rock Road Wichita, Ks 67226
(316) 636-8783
Ken.Thompson@wichitaks.ncr.com

Date: 26 Aug 93 16:08:34 EDT
From: psinntp!arrl.org@uunet.uu.net
Subject: Mini-Circuits
To: ham-homebrew@ucsd.edu

In rec.radio.amateur.homebrew, aj@sage.cc.purdue.edu (John Dormer) writes:

> I've got one, and I've used one of their mixers and three of their
>MAR-series amplifiers. They were really good devices, and the book
>showed me how to take advantage of them. Get one if you can.

The MAR series amps are MMICs, inexpensive, 50-ohm amplifiers good for up to about a GHz. Now, if 10 years ago someone had told me that I could buy a 20 dB amplifier with 10 milliwatts output that ranged from DC to 1 GHz for about \$2.00 I would have thought that person to be nuts. :-).

An article appeared in February and March 1987 QST explaining the MMIC nicely.

73 from ARRL HQ, Ed

Ed Hare, KA1CV
American Radio Relay League
225 Main St.
Newington, CT 06111
(203) 666-1541 - voice
ARRL Laboratory Supervisor
RFI, xmtr and rcvr testing

ehare@arrl.org

"You will never put the puzzle together
if you keep putting all of the pieces
back in the box." Colleen

Date: 27 Aug 93 01:22:01 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!tomb@network.ucsd.edu
Subject: SWR Meters
To: ham-homebrew@ucsd.edu

Gary Coffman (gary@ke4zv.uucp) wrote:

: Now suppose the line is **not** terminated in a resistor of the line's
: characteristic impedance. Let's first look at two extreme cases. If
: the line is **open**, then current will be zero and voltage will be
: maximum, a very high impedance point. Note that the voltage and
: current are now out of phase by 90 degrees. When the voltage collapses,

Poppcock. The instantaneous net voltage and current on a line at any point are the vector sum of the voltage and current of a forward and a reverse travelling wave. For each of those two, the ratio of voltage to current is the line impedance. If you do the measurement at a single frequency, and if the line impedance is real (no reactive component, purely resistive), the current and voltage will be exactly in phase. If you could truely open-circuit an end of the

line so there is _zero_ current there, then you can't say the voltage and current are 90 degrees out of phase at that point, because the current there is at all points in time _zero_. If there's a 90 degree phase shift between voltage and current, it's because you have put a purely reactive load at that point, not a true open circuit. Period.

=====

: Now this would all be pretty academic if we couldn't separate
: V_f and V_r so we could measure them. Various bridge type circuits
: can be used to separate the two wave components by taking advantage
: of non-reciprocal properties of the bridge circuit. We can also
: take advantage of the properties of travelling waves in the monimatch
: to do the same thing. It's difficult to show how to build a VSWR
: meter without drawings, so I'll refer you to the instrument on
: page 27-11 of The ARRL Antenna Book for a line section that will
: work at VHF/UHF and that can be made out of ordinary copper plumbing
: fixtures.

Gary earlier in the posting noted that an SWR bridge measures VSWR or ISWR rather than SWR. I take some issue with this. I claim that almost all bridges that are physically a small fraction of a wavelength make their measurement by ratioing current and voltage at a point in the line; a true VSWR meter would measure the RMS voltage at at least two places on the line (separated, for example, by 1/4 wavelength in the line), but this is NOT the way these meters work. Whether the voltage is measured with a transformer, a capacitive divider, or a resistive divider, it's the voltage at a _single_ point in the line. And at that same point, the current is measured, with a current transformer, the voltage drop through a resistor, or as an inductive pickup that's also a capacitive pickup monitoring the voltage: that is, the parallel wire.

A forward wave will have $v/i=z$, where i is measured as positive if flowing toward the load; a reverse wave will have $v/i=-z$, where i is measured as positive if flowing away from the load. The SWR meter works by expecting $v-i z=0$ for i measured positive toward the load; built in to the meter is an assumption about z ! The meter does NOT know the z of the line you are measuring, so if you use a 50 ohm meter on a 75 ohm matched line, it will tell you incorrectly that the line has an SWR greater than 1:1.

If you want more math details of how the meter works, I could be talked into providing them.

73, K7ITM

Date: 26 Aug 93 17:18:29 PDT
From: news.cerf.net!crash!cmkrnl!jeh@network.ucsd.edu
Subject: What kits would you like to see?
To: ham-homebrew@ucsd.edu

In article <25fvnj\$1lp@tribune.usask.ca>, gps19@herald.usask.ca (Gregory P. Siemens) writes:

> Michael Covington (mcovingt@aisun3.ai.uga.edu) wrote:
> : I'm getting ready to do some free-lance designing, and would like to start
> : a discussion...
>
> : What kind of kits would you like to see offered by companies like Ramsey
> : and others in the under-\$40-per-kit class?
>
> : What kinds of construction projects would you like to see featured in
> : magazine articles?

Hmmmm. How about a set of computerized test equipment based on a PC bus ISA foundation module?

Here is a suggestion for the "style" of kit or article: Don't make it a black box. Teach the builder something, and try to make some provision for "hackability".

I read about the Ramsey 2-meter transceiver with the diode-programmed freq selector, with instructions on how to set it up, and I thought that was really nifty. Someone who knows something about digital circuits could take that and add on a keypad-driven selector, a scanner, lots of things.

This was one area where Heathkit was never very good. You got real good at soldering, but you didn't have much chance to learn anything about the circuit topology. And of course on their later kits (like the WWV clock) they were using things like microprocessors with on-board ROM; If you didn't like the way the thing was programmed, that was just too bad. It would be far more fun if that ROM was in a separate chip (with commented source code on a disk that comes with the kit) so that a user who wanted to could "hack" it a bit. Sure this might be a little more expensive, but it's closer to what kit building is supposed to be about (imho).

--- Jamie Hanrahan, Kernel Mode Systems, San Diego CA
Internet: jeh@cmkrnl.com (JH645) Uucp: uunet!cmkrnl!jeh CIS: 74140,2055

Date: 26 Aug 93 16:05:44 CDT
From: equalizer!timbuk.cray.com!walter.cray.com!cbetz@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <25fpjv\$1fbn@ilx018.intel.com>, <aj.746340826@sage.cc.purdue.edu>,
<00\$@byu.edu>
Subject : Re: Mini-Circuits

In article <00\$@byu.edu>, richard@alaska.et.byu.edu (Richard B. Christensen)
writes:

> I have tried getting some of the amplifiers, but their minimum order
> is ten. The minimum order for the other components is one. How did
> you work around this? I would like to order I think it was MAR-6 \$1
> or so, but I don't want to buy 10 just 2-3.
>
> Richard Christensen

Check with Down East Microwave and/or Microwave Components of Michigan. I
think they both handle the Mini Circuit MMICs and the Avantek equivalents.
Neither place has a minimum quantity requirement.

Charlie Betz, NOAKC

Date: 26 Aug 93 15:20:28 GMT
From: ogicse!uwm.edu!math.ohio-state.edu!cyber1.cyberstore.ca!vanbc.wimsey.com!
vanbc.wimsey.com!not-for-mail@network.ucsd.edu
To: ham-homebrew@ucsd.edu

References <CCDM6I.F7w@murdoch.acc.Virginia.EDU>,
<930826.135757.9J2.rusnews.w165w@cpuig.infoserv.com>, <CCE453.BzF@fc.hp.com>r-mai
Subject : Re: home-brewed DSP code... suggestions?

I just got my TI DSK board, and it's as advertized. Being a real newbie
I do appreciate the fact theat they gave us the necessary book and a
simple assembler and debugger.

What I would like from the world at large, is a little help with such
things as a daughter board with more program RAM (or non-volatile
something or other), and a bit more of atutorial on the assembly
lang programming of the C26. The assembler, by the way, doesn't do
calculations associated with many directives; you have to figure
out the math yourself and enter the constants as values rather than
as variables derived from other values....

Particularly interested in mapping (being such a newbie) between the
"REAL" TI assemblers' directives and ruiles, and the simple one
that came with the board.

By the way, anyone heard of a try to put W9GR version one filter s/w into the DSK? Seems like a natural....

Cheers
Mark Fraser

End of Ham-Homebrew Digest V93 #23
